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RECORD OF GEOGRAPHICAL PROGRESS.

NORTH AMERICA.

MODIFICATION OF THE GREAT LAKES BY EARTH MOVEMENT.—Allusion was made in the *Bulletin* (No. 3, 1897) to the paper read by Mr. G. K. Gilbert, at the Detroit meeting of the American Association, on the earth movements that are changing the altitude of the lands in the region of the Great Lakes, and thereby modifying the coast lines. In the Eighteenth Annual Report of the United States Geological Survey, Mr. Gilbert will have an extended paper on this subject, and meanwhile his Detroit paper has been printed in the *National Geographic Magazine* (Vol. VIII, No. 9). He says the geological history of the lake region has been characterized by a progressive change in altitude, the northern and north-eastern portions of the region becoming higher, so as to turn the waters more and more towards the south-west. The interesting question is whether the land is still rising at the north and the lakes still encroaching on their southern shores. In 1894, Mr. J. W. Spencer expressed the opinion that the movements were still in progress and predicted that they would result in the restoration of the Chicago outlet of Lake Michigan and the drying of Niagara. Mr. Gilbert has tested this question by the examination of existing records of lake heights, as recorded by gauge readings and by the establishment of a number of new gauge stations in 1896. Eliminating sources of error as far as practicable, Mr. Gilbert admits that none of his determinations is free from doubt, but the fact that all the measurements of the past twenty years and more indicate continued tilting to the southwest inspires confidence in the theory that the movements are still in progress. The computed mean rate of tilting, 0.42 foot per 100 miles per century, is not entitled to the same confidence as the fact of tilting.

Mr. Gilbert deduces some conclusions, assuming the mean rate of tilting to be as given above. The mean lake level is rising at Duluth 6 inches per century and falling at Heron Bay 5 inches. The submerging of the coast of Lake Erie at Toledo and Sandusky is estimated at 8 or 9 inches in a century. The estimated rise of Lake Michigan at Chicago is estimated at between 9 and 10 inches in a century. At the estimated rate of tilting, all the water of the Niagara River will, in about 3,000 years, have been diverted to the old channel near Chicago which was made by the outlet of a glacial

lake, and through this channel the waters now carried over Niagara Falls will be borne to the Illinois River, the Mississippi and the Gulf of Mexico. The older part of Chicago has already been lifted several feet to secure better drainage, and the time will surely come when other measures of protection will be demanded.

THE GEOLOGICAL SURVEY OF WEST VIRGINIA.—Dr. I. C. White has been elected Superintendent of the State Geological and Economic Survey of West Virginia, which was established by the Legislature at its last session. It is expected to begin the work of the Survey at once. Its headquarters are at the West Virginia University, Morgantown. The determination of the longitudes of all the county seats has been assigned to the Assistant Geologist, Professor J. L. Johnston, Professor of Civil Engineering. Professor S. B. Brown, who fills the chair of Geology at the University, has been elected First Assistant Geologist and Curator of the Collections.

ALASKAN AND CANADIAN NOMENCLATURE.—The Board on Geographic Names, at Washington, has passed upon the orthography of a number of names in the Upper Yukon region and along the overland routes to it, which often appear incorrectly spelled in the newspapers. When a geographic object is named after a white man there usually can be no doubt as to the proper spelling. Lake Lindeman, for instance, was named after the present Vice-President of the Bremen Geographical Society, but it often appears in the press as Lindermann or Lindemann. Lake Lebarge is incorrectly given as Labarge. The lake was named after Mike Lebarge, a member of the Western Union Survey party, which was establishing the route for a telegraph line to Bering Strait and Siberia when the news of the successful laying of the Atlantic cable, in 1869, suddenly put an end to its operations. In the same way the Lewes River is frequently printed as the Lewis River. The Board rules in favor of Teslin lake and river, which have been variously known as Hootalinqua, Hotalinqua, Teslin-hina, Teslin-too, etc. The terminations *hina* and *too* are said to mean "river" in the Indian dialects. It is not so easy to determine the proper spelling of aboriginal names, which is often purely arbitrary. The landing place at the head of Lynn Canal, where all freight for the Chilkoot Pass route is deposited, is known to miners, and the press and public generally as Dyea, but the Board has decided to adopt Dr. Dall's spelling Taiya. It will take a persistent educational process to engraft this reformed spelling upon public attention, and it is doubtful if the

effort is worth while or will succeed outside the Government publications, where the decisions of the Board are obligatory.

UNITED STATES DAILY ATMOSPHERIC SURVEY.—The Weather Bureau has issued a pamphlet with this title by Mr. Willis L. Moore, chief of the Bureau, in which he expresses the opinion that we have long since reached the highest degree of accuracy in the making of forecasts possible to be attained by surface readings. We are still ignorant of the mechanics of storms, and of the influence of the forces in the upper air that give inception to storms and supply the energy needed to continue them. This is the reason why the Bureau is now undertaking the exploration of the upper air by means of simultaneous observation, at a uniformly high level, from many kite stations. Professor Marvin devised appliances for this work with such success that apparatus is now easily sent up to a height of a mile in only a moderate wind. An automatic instrument has been invented which weighs less than two pounds and which records temperature, pressure, humidity and wind velocity. Before next spring, not less than twenty stations between the Rocky Mountains and the Atlantic will be taking daily readings at an elevation of a mile or more. These high level readings will be studied in connection with the surface chart made at the same moment, and it is hoped in this way to reach a better understanding as to the development of storms and cold waves and thus, eventually, improve the weather forecasts. There are many interesting problems to be solved by this investigation.

THE POPULATION OF CUBA.—The Spanish newspapers have recently published data concerning the population of Cuba at the time the present devastating war began. The figures for the six provinces are only approximate and are as follows: Matanzas, 300,000; Havana, 480,000; Puerto Principe, 72,000; Santa Clara, 360,000; Pinar del Rio, 320,000; Santiago de Cuba, 230,000; total, 1,762,000. Of this population, 1,228,000 was white, 490,000 negroes and mixed bloods, and 44,000 Chinese and other Asiatics. The two chief cities, Havana and Matanzas, had respectively, 250,000 and 60,000 inhabitants. It is believed that the frightful devastation of war, pestilence and famine has reduced the number of inhabitants fully one-third.

THE STATE GEOLOGIST OF MISSOURI.—The *American Geologist* and the *Journal of Geology* have recently commented with severity upon the deplorable effect of political interference in Missouri with

the office of the State Geological Survey, all the scientific men of that bureau having been removed to make place for political henchmen. The *American Geologist* says that the only reason for the removal of Dr. Keyes as the head of the Survey was that he was not sufficiently active in practical politics. The new State Géologue is a man whose name has never been pronounced as a geologist. Not a scientific man is left on the Board of Managers, Prof. Shepard of Drury College having resigned, because he found the new atmosphere intolerable. The records and cabinet were consigned to an attic, field work has been abandoned and important papers that were nearly ready for publication were "not needed." The strictures upon the remarkable reorganization of the Survey have elicited a reply from the man at the head of it, which seems further to emphasize his qualifications for the place. Here is a specimen sentence or two addressed to two geologists of international reputation:

"Notwithstanding your scurrilous attack I am still here and ready to cope with either of you on any scientific question. As a partisan, a slanderer or a liar I cannot hope to compete with you successfully. But on scientific questions I am always ready for you.

"I will now remind you that every dog has his day. This is my day and the time is not far distant when your client [meaning Dr. Keyes, recently the State Geologist] will wish that he had carried his tracks along with him. That you and he have run up against the wrong man is only a question of time."

The exhibition Missouri is making of her Geological Survey shows the danger that lies in the controlling power of politicians. The work that is within the province of such surveys is of the highest economic as well as scientific value, and the law should place it beyond the power of "practical politics" to interfere.

THE JOURNAL OF SCHOOL GEOGRAPHY.—It is doubtful if any other periodical is more pervaded with the spirit of modern geographic ideas than this magazine, edited by Professor R. E. Dodge, Professor of Geography at the Teachers College, New York City, and devoted to the interests of the common-school teacher of Geography. It is full of suggestions and information, and the central idea seems to be Ritter's dictum that Geography is the study of the Earth's surface and man's relation to it; the influence of his geographic environment upon man and his influence upon it. An article in the October number by Ellen C. Semple deals with many of the geographic causes for the location of cities, a topic that is closely related to commercial geography; another article treats of

home geography or the study of geography from nature instead of text-books. Mr. Hayes's description of the Yukon district is a timely help for the teacher now that so much interest centres in that part of the world. Professor Davis has some extracts from an article on Ashanti to show how such extracts may be prepared for practical use in teaching by a couple of hours spent each week in a library, where a few geographical journals and important new books of travel may be consulted. A careful perusal of the Notes, in which the latest information and ideas of explorers and geographers are epitomized, will help the teacher to keep abreast of geographical progress.

THE FUR-SEAL CONFERENCES AT WASHINGTON.—In the conference held at Washington recently between representatives of the United States, Russia and Japan, these Governments agreed to desist from pelagic sealing for one year, and at the end of this period further arrangements will be made.

In the second conference, the representatives of this Government, Great Britain and Canada participated. The delegates were not empowered to recommend legislation for the improvement of the sealing situation in the northern Pacific and Bering Sea, but only to submit the facts concerning the fur-seal, upon which they agreed. The scientific experts were Prof. D'Arcy W. Thompson, of Dundee, representing Great Britain; Mr. James M. Macoun, of the Canadian Geological Survey; and our Government was represented by Dr. David Starr Jordan, of Stanford University, and Charles S. Hamlin, ex-Assistant Secretary of the Treasury. They were in essential accord upon the facts in the case. Here is a summary of the valuable conclusions they reached condensed from *Science* (No. 152):

The Pribylof herd has declined from year to year, and is not now more than a third or a fifth as large as in 1884. The most notable decrease was observed during the past season, but the number of breeding females in 1896-97 was still between 130,000 and 160,000. There is a high death rate among the pups, due to natural causes, and not more than one-third or one-half of them reach the age of three years. Thousands of them starve on account of the killing of their mothers by pelagic sealing. The catch at sea contains a marked excess of females, which is contrary to the statement of many pelagic sealers, who have declared that their catch included as many males as females, and sometimes more. Not all these females are nursing or pregnant, for many of them have lost their

pups through natural causes, and many others are yearling or two-year old females. Excessive pelagic sealing has led to a decrease in the herd, but pelagic sealing has recently fallen off in a greater ratio than the herd, thus producing a tendency towards equilibrium in numbers. In other words, the pelagic catch has fallen off one-half in three years, though the herd has not diminished by one-half in the same time. It is to be feared, however, that before an equilibrium could be reached only a small part of the present number of seals would be left; and even if pelagic sealing should now be stopped, its effects would be felt up to 1900, for half of the number of pups that died of starvation in 1895, for instance, were females, that were deprived of their mothers by pelagic sealing, and the progeny they would have had if they had lived will fail to appear in 1900. The final conclusion was that the herd is not in danger of actual extermination, as long as its haunts on land are protected and the protected zone around the islands is maintained. Both land and sea killing now yield only a small profit. This means that the point of commercial extermination, where the returns are incommensurate with the capital involved, has about been reached.

SOUTH AMERICA.

A NEW FOUND LAKE.—A report has been sent to the French Colonial Minister from French Guiana that a gold prospector named Ross has discovered a new lake south-east of the colony, in the region that is in dispute between France and Brazil. The lake is the source of the River Mapa Grande, which is south of the Car-sevenne River and flows parallel with it. The lake extends in an east-west direction; is 35 kilometres long and four wide, and its waters are quite black. Many small streams flow into the lake from the surrounding hills, and the region is surpassingly rich in all the varieties of animal and vegetable life with which French Guiana abounds.—*Deutsche Rundschau*, Vol. XX, No. 2.

GEOGRAPHIC WORK IN PERU.—The Sociedad Geográfica de Lima is doing a great deal to advance geographic knowledge of Peru. The latest numbers of the *Boletin* report its work up to June, 1897. Last year, committees that were appointed to study the effect of high altitudes upon the human organism investigated the respiration, chest measurements, condition of the blood, etc., of Indians and other Peruvians living at different altitudes, or temporarily among the higher mountains. The Society expected to receive the committee reports before the close of 1897. The recent gold mining

excitement in Carabaya prompted the Society to send Señor Balta there to make geological investigations. Thus far, he has discovered fossils indicative of Lower Silurian and possibly Cambrian age, and he has accordingly pushed the geological history of Peru further back than was hitherto known. A new feature of the Society's work is the establishment of branches in the various parts of the country for the study of local geography. These branches have been opened at Piura, Tarma, Cuzco and Arequipa, and another is contemplated at Puno, from which contributions will be expected on the geography, climatology and archæology of Lake Titicaca. These geographic centres are already producing valuable papers, which will be printed in the *Boletin*.

THE PRINCETON UNIVERSITY EXPEDITION TO PATAGONIA.—Mr. J. B. Hatcher, of Princeton, started for Patagonia on February 26, 1896, to collect vertebrate fossils and recent organisms for the University and obtain photographs and data relating to the aborigines for the Bureau of American Ethnology. He was accompanied by Mr. O. A. Peterson, also of the University. They outfitted at Gallegos, on the east coast of Patagonia, some distance north of the Strait of Magellan, where they secured a light tent, five horses and a small cart with which they travelled along the coast to Punta Arenas, making large collections in palæontology and natural history. Then they returned to Gallegos and on Dec. 1, 1896, set out westward toward the southern Andes, seeing no human beings for four months and six days. Among the most important geographic features they discovered was a river fully equal in volume to the Santa Cruz, which they had ascended to its head in Lake Argentina. The river occupies a most unexpected position. "It heads in the pampas east of the Cordillera, but flows westward through a profound gorge and undoubtedly falls into the Pacific at some undetermined portion of the rugged Chilian coast. It is fed by glaciers, often of noble magnitude; it is swift and tumultuous so that it was found impossible to cross it, or indeed to trace its course, with the facilities at command, more than a part of the way through the cañon in which it traverses the Cordillera." Mr. W. J. McGee, writing of Mr. Hatcher's work in the *National Geographic Magazine*, says that certain features of southern South America brought out through Mr. Hatcher's observations are especially significant to students of geographic development. "One of the characteristics of the region is the dearth of soil; another is the paucity of the flora, both in individuals and species, and the fact that the flora of

the pampas is evidently derived from that of the Cordillera; still another is the presence of saline lakes, of residuary character, scattered over the pampas. These features indicate conclusively that the Patagonian pampas have but recently been raised from the ocean bottom to form dry land." Mr. Hatcher has sailed again for Punta Arenas to continue his explorations. He has written a very interesting paper (*Nat. Geog. Mag.*, Nov., 1897), summarizing the results of his recent work.

THE POLAR REGIONS.

CAPTAIN SVERDRUP'S PROPOSED ARCTIC WORK.—The *Geographical Journal* (July, 1897) contained this paragraph:

"With Dr. Nansen's support and approval, Captain Sverdrup proposes, next year, to proceed in the *Fram* up Smith Sound for the exploration of the northern coasts of Greenland. One object of the expedition will be to examine the so-called 'palaeocrylic' ice and, if possible, to determine whether it be due to accumulation from the resistance offered by the arctic lands north of America to the polar currents, and how far it extends northward before giving place to ice more like that encountered by the *Fram* in the eastern hemisphere. The possibility of reaching a high latitude by Smith Sound will, of course, much depend on the season, but, should the northern coast of Greenland be reached, it is hoped its exploration from the point reached by Peary on the east may be completed."

On January 12, 1897, R. E. Peary, C.E., U. S. N., read his paper before the American Geographical Society, outlining his plans for the explorations which he will begin next year, and naming as his base of operations the very region on the north coast of Greenland which, it is now said, Captain Sverdrup proposes to explore "with Dr. Nansen's support and approval." Mr. Peary's plans were copied in many of the geographical journals of Europe and everybody interested knew what he proposed to attempt, for months before Sverdrup announced a change of plans that is to take him to Peary's field of work. How well this is understood abroad is indicated by the address which Sir Clements Markham made at the opening of the session of the Royal Geographical Society on Nov. 8 last, in which he said:

"Mr. Peary intends to adopt the plan of taking Eskimo families up Smith Sound and, with their aid, to discover the most northern land to the north of Greenland. Captain Sverdrup, Nansen's companion, is fitting out the *Fram*, also with the intention of proceeding up Smith Sound and exploring the unknown part of the north coast of Greenland."

It was Peary who discovered and mapped the larger part of the north coast of Greenland, and his proposed headquarters during the coming campaign are in the immediate neighborhood of the still unknown western portion of the coast line, and it properly devolves

on Mr. Peary to complete the work of outlining the north coast of Greenland, which he has already so far advanced, and which everybody has known for months he intends to undertake. He distinctly included in his paper above referred to some of the most important features of the work outlined by Sverdrup. While desiring, first of all, to plant his food caches, next fall, as far north as possible on the west coast of the archipelago north of Greenland, he said that if the first season was unfavorable for a dash across the sea-ice to the far north it might be devoted to a detailed survey of the archipelago and a reconnaissance of the east coast as far south as possible, a work that would, of course, involve the completion of the outlining of north Greenland.

The earlier announcements of Captain Sverdrup's plans were to the effect that he intended to make investigations between Spitzbergen and Greenland; and he did not change his plan and declare his intention of going to the region which Mr. Peary is to explore until some months after Peary's project was well known. The *Geographische Zeitschrift* for August said that Sverdrup was going to the neighborhood of Peary's headquarters, next year, with a party of fifteen men, four years' food supplies, and many dogs and sledges. He is therefore preparing for a long campaign on the north coast of Greenland. *Petermanns Mitteilungen* says that the Norwegian Government will give him \$50,000 towards his outfit. The same Government assisted Dr. Nansen to carry out his last great work. It would be interesting to know what that Government would have thought of any one, who might have attempted to appropriate Dr. Nansen's scheme of exploration in the two years that elapsed between Nansen's announcement of his plans and the beginning of his actual work in the field. It is very rare, indeed, that an explorer attempts to occupy any district when another explorer is actively preparing to carry out a previously announced intention to explore the same district. So grave a breach of courtesy is not likely to be widely approved.

MR. WELLMAN'S NEXT ATTEMPT.—It is reported that Mr. Walter Wellman, of Chicago, intends to make another Arctic journey next summer. He proposes to sail from Bergen in June, and after forming a depot of provisions at Cape Flora in Franz Josef Land, he will travel northward to Cape Fligely, whence he hopes to start in 1899 towards the Pole.

THE JACKSON-HARMSWORTH EXPEDITION.—After its third winter in Franz Josef Land, this expedition returned to England on

Sept. 3 last, having left Cape Flora on Aug. 6 on the steamer *Windward*. The members of the party were Mr. Jackson, in command; Lieut. Armitage, R. N. R., nautical astronomer; Dr. Koettlitz, geologist and medical officer; W. S. Bruce, naturalist; and Messrs. Wilton and Heyward. Accounts of the first two seasons work have already been printed in the *Bulletin*. As the party, in conjunction with the voyage of the *Fram*, had already proved that there is an open sea north of the small islands of which Franz Josef Land is composed, no attempt was made, during the last year, to reach a high northern latitude, but the time was spent in completing the survey of the islands, especially towards the west. Last winter was comparatively mild and calm and the scientific observations were continued throughout. The sledging expeditions, last spring, proved that the high, glaciated land behind Cape Mary Harmsworth is the farthest western land, and Mr. Jackson concludes that Gillis Land does not exist in the position usually assigned to it. The main geographical results of the three years' work are the proof that Franz Josef is an archipelago, and the determination of its northern coast. Considerable collections of geological, botanical and zoological material were made. The *Scottish Geographical Magazine* says (Oct., 1897):

"Besides this extension of our topographical knowledge of the archipelago, the most valuable results of the expedition will be the regular series of meteorological and magnetic observations. The meteorological data, when discussed with those of the *Fram* and of Nansen and Johansen, as well as with those of Ekroll in Spitzbergen and Peary in Greenland, will be of exceptional value."

THE SUMMER STATION IN SPITZBERGEN.—Spitzbergen is now connected with Europe by a steamer service in July and August, which enables many tourists to learn something about the polar regions. The steamer starts from Hammerfest, Norway, passes Bear Island to South Cape, Spitzbergen, and arrives at Advent Bay in Ice Fiord, on the west coast of Spitzbergen, which is the principal station on the coast. A hotel has been erected there containing over thirty small bedrooms, and equipped with a good culinary department and a sufficient number of servants. Sailboats are kept for excursionists and marine investigations, and occasionally a steamer makes the trip to Danes Island, from which Andréé started on his balloon voyage. During the summer, the Norwegian Government maintains a post-office at Advent Bay. A little newspaper is to be printed there in the French, English, German and Norwegian languages. (*Bulletin, Société de Géographie de Lille*, No. 9, 1897.)

EUROPE.

THORODDSEN'S EXPLORATIONS IN ICELAND.—Mr. T. Thoroddsen, whose long and minute investigations in Iceland have made him well known, writes (*Globus*, No. 14, 1897), that he was able, last summer, to carry out his scheme of exploration in spite of almost continual fog and snow. He devoted last June and July to the Arnes and Rangárvalla districts studying the results of earthquakes there in recent years and making collections illustrating earthquake phenomena. He found many landslides, faultings, crevasses and other results of earthquakes. New hot springs are seen and others have disappeared. The inhabitants have repaired the damage to their property and are again living in peace. In August the explorer traversed the northern part of the Húnvatns district to the coast. He has now visited all the coasts, peninsulas and fiords and all the inhabited and uninhabited parts of the island, except the plateau region northwest of Langjökull, which will have his attention next summer. He adds that when this work is done he hopes to devote the rest of his life to quiet scientific pursuits, which have been much interrupted by his annual wanderings through Iceland.

DEVELOPMENT OF LARGE CITIES IN EUROPE.—In the beginning of the seventeenth century, Vienna and Madrid were already numbered among the cities containing over 100,000 inhabitants. In 1600 A. D. no city in Christian Europe numbered more than 200,000 inhabitants. When the eighteenth century dawned, Paris and London had passed the half-million mark, and each of twelve towns contained at least 100,000 souls. In the course of that century, twenty-three cities entered the list of cities having 100,000 population or more, but Seville, which had occupied a place in the list, had to be stricken from it. The largest growth in population was in St. Petersburg, Berlin, Hamburg, Copenhagen, Dublin, Bordeaux, Marseilles, Lyons, Barcelona and Valencia. Italy had five large cities, the Iberian peninsula and France, four each, Germany three, Austria-Hungary and Russia two each, and the Netherlands, Denmark and Turkey, one each. Eight cities each contained more than 200,000 inhabitants, Moscow, St. Petersburg and Vienna being the latest additions to this list. The largest growth was seen in St. Petersburg, with Dublin, Berlin and Naples following. In the eighteenth century the large cities increased in population only in proportion to the increase in the total inhabitants, while in the seventeenth century the increase of population in the cities was

proportionally greater than that of the country. (*Globus*, No. 11, 1897.)

AFRICA.

SAVORGNAU DE BRAZZA LEAVES AFRICA.—M. Henri de Lamothe has been named by the French Government as governor of the French Congo to succeed M. de Brazza, who returns to France. De Brazza has been identified with African exploration and development for twenty-two years, since the day he started from France to ascend the Ogowe River in 1875, when he was twenty-three years old. Other explorers had endeavored to explore the Ogowe, but had been thwarted by the Pahuin tribe. In 1877 he completed his survey of the Ogowe and discovered the Alima tributary of the Congo, upon which, later, he launched a steamboat which he transported overland, forty miles, from the Ogowey. In 1880, he founded the station of Brazzaville, on the north side of Stanley Pool. It was his explorations throughout the district now known as the French Congo that enabled France to claim that large region which since has been one of France's colonies in Africa. He has established twenty-seven stations in the French Colony, including a number on the Congo River. The reason Stanley planted so many stations on the south bank of the river was to prevent De Brazza from crossing over and claiming a part of that territory in the name of France. After the boundary between the French Congo and the Congo Free State was fixed by treaty, a large part of Stanley's stations were abandoned, as there was no longer need of watching the movements of the French across the river. De Brazza has been governor of the French Congo since the Colony was organized. He may be said to have created the Colony, and France owes this vast possession to his assiduous efforts. He has spent most of his active life in West Africa, and he will always be remembered as one of the ablest of the pioneer explorers. He has always shown great patience and tact in dealing with the natives, and is one of the few men in Africa who have never failed to carry out the important enterprises they have undertaken.

THE POPULATION OF EGYPT.—The census taken on June 1 shows that the settled population of the country is 9,385,235, while in 1882 it was only 6,533,261. The semi-nomad population, including the Beduins, has risen to 172,696. There is a decrease in the number of nomads, which is now 96,302, against 98,196 in the former year. The total population of Egypt is, then, 9,654,323, with an increase of 2,872,283, or 42 per cent. The towns of Damietta and

Rosetta have diminished, while all the others show an increase in population. The largest cities and towns are: Cairo, 576,400 inhabitants; Alexandria, 319,700; Tantah, 57,300; Assiut, 42,100; Mansurah, 36,300; Zagazig, 35,500; Port Said, 35,000; Damanhur, 32,000; Damietta, 31,200. (*Scot. Geog. Mag.*, Nov., 1897, and *Boll. della Soc. Geog. Italiana*, Vol. X, fasc. 9.)

COMMERCIAL GEOGRAPHY.

GEOGRAPHICAL EXCHANGE ASSOCIATION.—The *Journal of School Geography*, (No 8, 1897) says that an association of teachers was formed a year ago by the New England Association of Educational Workers for the exchange of geographical material, and to secure from the Government and the commercial world products and laboratory material for use in teaching geography. The present membership is largely in eastern New England. Each member sends to the secretary, periodically, a list of what he can supply from his neighborhood and what he wishes to receive. These lists are supplied to each member in duplicate and thus exchanges are made easy. Plant, animal and mineral specimens from the sea-shore and country are exchanged for illustrations of processes of manufacture available in the cities. As the Association grows in numbers and influence it is hoped that much may be obtained from the Agricultural Department and the Consular service.

TECHNICAL EDUCATION IN GERMANY.—One of the chief reasons for Germany's rapid progress in manufactures and commerce is the superiority of her technical schools. For the second time, a British Commission has now reported that Great Britain is not keeping pace with Germany in the study and improvement of the technical processes of production and manufacture. The importance of this study is manifest when it is remembered that science and art now enter largely into the conduct of every industry. In the mining, iron and steel industries, for instance, science enters into every process by which coal is converted into coke, iron ore into iron, iron into steel, and steel into the thousand articles for which it is employed. It is the same with the textile industries. Germany is constantly experimenting in the technical schools with fibres, with the processes of weaving, dyeing and finishing cloths, and constant efforts are making in all directions to improve materials and methods of treating them.

TEA AND RICE IN CHINA.—China formerly produced tea only for her own consumption. The foreign demand was greatly

augmented by the opening of the treaty ports which largely stimulated production. About the same time, however, tea culture began to thrive in India and was developed there under more excellent conditions, particularly in Assam and Ceylon. The result is that the Indian tea trade has flourished at the expense of the Chinese trade, and the important falling off in Chinese exports is due also to the antiquated method of preparing the leaf for market. Nine-tenths of the export Chinese teas are produced in the provinces of Fokien and Chekiang, south of the Yangtse River and in the Island of Formosa, now a Japanese possession. The green tea of China, according to the *Revue Française* (August, 1897), is not admitted into Great Britain, under the provisions of the Adulteration act, though it is largely imported into the United States.

Rice is the chief food resource of the Chinese, and its exportation is absolutely forbidden by the laws of the empire. It is cultivated in the entire valley of the Yangtse and in the southern provinces of China. Every year a great number of junks laden with rice descend the great river to the large city of Chinkiang, where the cargo is transferred to other junks that carry it by way of the Grand Canal to Pekin. In this way the provinces pay their tribute to the Government and, on some occasions, the tribute rice, in times of food scarcity in the northern provinces, has been largely distributed among the people. Two rice crops are harvested in a year.

CONNECTING BERMUDA AND JAMAICA BY CABLE.—The Direct West India Cable Co. was organized on Sept. 1 last with a capital of \$600,000 to lay a sub-marine cable from the Bermuda Islands, by way of Turks Island, to Jamaica. When this cable is laid Jamaica will be in direct cable connection with the North American mainland, as the cable from Bermuda to Halifax has been in operation for some years.

SUEZ CANAL TRAFFIC IN 1896.—The statistics of the traffic through the Suez Canal in 1896, as given in the *Revue Scientifique*, show that Great Britain, with 2,162 ships and 5,817,768 net tonnage, had 68 per cent. of the total tonnage passing through the canal. The British tonnage, however, was 4 per cent. less than in the preceding year, while the growing trade of Germany and Russia with the Orient was illustrated by the fact that the tonnage of Germany increased 14 and that of Russia 35 per cent. Japan's first appearance as a trader with Europe in her own vessels is denoted by a record of ten ships and 30,553 net tonnage. Not a single vessel with the stars and stripes at the masthead passed through the

canal. This item belongs in the category of Buenos Ayres, with only one American vessel in that port in a year, and Hamburg, which is said not to have seen an American vessel in thirty years.

THE GROWTH OF HAMBURG.—The development of German industry in recent years is vividly illustrated by the rapid development of its chief port, Hamburg, as shown in the figures recently quoted in *Le Tour du Monde* (Aug. 7, 1897). In 1882 the number of vessels entering the port from the sea was 6,189, a tonnage of 3,030,990; in 1889 the figures were 8,079 ships, or 4,809,892 tons, and in 1895, 9,443 ships, or 6,812,394 tons—52 per cent. more vessels and 125 per cent. greater tonnage in 1895 than 1882. The river port has grown in importance also, the number of vessels increasing from 9,380 in 1882 to 12,385 in 1889 and 14,135 in 1895, and the tonnage from 1,435,443 in 1882 to 2,349,527 in 1889 and 3,076,421 in 1895. The traffic is now so great that new docks are to be made. (*Scot. Geog. Mag.*, Sept., 1897.)